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nm... The main VCSEL is modulated by using an external electrical field applied perpendicular to the active layer 10, employing the Stark-effect to deliberately change the band-gap of the active layer 10 and hence move the emission wavelength into and out of resonance with the optical cavity formed between the top and bottom mirrors. The optical output is therefore modulated by the electrical field and not as by injected carriers..."(Col. 2, lines 45-49).

Kullander further states, at col. 2 lines 62-64 "... The electrical field is supplied by contacts 12 on top surface and a contact 13 to the 1300 nm VCSEL bottom mirror, which may serve as ground..."

Kullander-Sjoberg further states "... The 980 nm VCsel diode 1 formed in the same structure as the 1300 nm VCSEL 9 acts as an optical pump to create a population inversion at the active layer 10 of the main VCSEL..."

The Examiner states, at page 4 of the office action "applicant argues that Kullander-Sjoberg et al. does not disclose the limitation "optically pumping the VCSEL by directing an output from a pump laser onto the bottom face of the VCSEL as to cause the VCSEL to generate a first output having an output greater than zero..." as recited in claim 1. However, Kullander-Sjoberg et al clearly teaches about optically pumping the VCSEL 9 by directing an output from a pump laser 1 onto the bottom face 8 of the VCSEL..."

The Examiner also states that Kullander-Sjoberg teaches and describes the step of "modulating the output light power of the pump laser so as to modulate the carrier population in the VCSEL's active region and thereby *to modulate the output of the VCSEL...*" No such ability of 'modulating the output light power of the pump laser' is shown or suggested by Kullander-Sjoberg. The Examiner refers to col. 2, lines 33-39 as supporting this feature, but this portion of the text merely recites "...The 980 nm VCSEL diode 1 formed on a single structure as the 1300

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nm VCSEL 9 acts as an optical pump to create a population inversion at the active layer 10 of the main VCSEL. Since the pumping VCSEL is part of the same structure, there is no need to provide any optical elements to achieve good optical coupling..." No mention or suggestion is found in the references, *at all* of 'modulating the output of the VCSEL' of Kullander-Sjoberg. Rather, Kullander-Sjoberg appears interested in providing a VCSEL with one specific 1300 nm output.

Accordingly, for at least the reason that the Kullander-Sjoberg fails to teach *every* limitation of the claims, the rejection is improper, and the claims should be allowed. Applicants have amended claim 3 to include the limitation regarding modulation, and thus submit that claims 3 and 4 are patentably distinct over the combination of Kullander-Sjoberg and Yuen.

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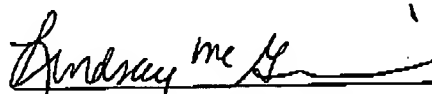
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Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

3/4/2004
Date


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